INSTALLATION

Endura® EW5001 Wireless Access Point/Bridge

C2681M (2/08)

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Regulatory Notices

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

RADIO AND TELEVISION INTERFERENCE

This equipment has been tested and found to comply with the limits of a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission's rules.

In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and television reception.

This Class A digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

EXPOSURE TO RADIO FREQUENCY FIELDS

The EW5001 is designed to operate at 2.4 GHz or 5.8 GHz with up to 631 W equivalent isotropically radiated power (EIRP) maximum transmit power. This level of radio frequency (RF) energy is above the maximum permissible exposure (MPE) levels specified in FCC OET65:97-01. Take the following precautions during installation:

- The antennas used for this transmitter must be installed to provide a separation distance of at least 7.8 ft (2.4 m) from all persons. It must not be located or operated in conjunction with any other antenna or transmitter.
- Mount the antenna in a manner that prevents any personnel from entering the area within 7.8 ft (2.4 m) of the front of the antenna.
- During installation and alignment of the antenna, do not stand in front of the antenna assembly.
- During installation and alignment of the antenna, do not handle or touch the front of the antenna.

Video Quality Caution

FRAME RATE NOTICE REGARDING USER-SELECTED OPTIONS

Pelco systems are capable of providing high quality video for both live viewing and playback. However, the systems can be used in lower quality modes, which can degrade picture quality, to allow for a slower rate of data transfer and to reduce the amount of video data stored. The picture quality can be degraded by either lowering the resolution, reducing the picture rate, or both. A picture degraded by having a reduced resolution may result in an image that is less clear or even indiscernible. A picture degraded by reducing the picture rate has fewer frames per second, which can result in images that appear to jump or move more quickly than normal during playback. Lower frame rates may result in a key event not being recorded by the system.

Judgment as to the suitability of the products for users' purposes is solely the users' responsibility. Users shall determine the suitability of the products for their own intended application, picture rate and picture quality. In the event users intend to use the video for evidentiary purposes in a judicial proceeding or otherwise, users should consult with their attorney regarding any particular requirements for such use.

Description

The EW5001 is a high-performance, single-radio wireless unit that can be configured as either an access point or a bridge.

Access point: The EW5001 provides a wireless link between a cluster of EW5301T wireless video encoders and an Endura® network in a point-to-multipoint configuration. It serves as a proprietary wireless network router (refer to Figure 2 on page 8).

The EW5001 receives MPEG-4 video streams from EW5301T wireless video encoders. The EW5001 routes these streams over the Endura network to other Endura system components.

Bridge: The EW5001 provides a wireless point-to-point link with another wireless bridge (EW5001 or EW5002); refer to Figure 3 on page 9.

Bridge with IP-type video device: An Endura-enabled IP-type camera or camera system connects to the EW5001 through the network port for video input; the EW5001 provides a wireless point-to-point link with another wireless bridge (EW5001 or EW5002); refer to Figure 4 on page 10.

MODELS

EW5001-2-xx*	Wireless access point or bridge, 2.4 GHz
EW5001-5-xx*	Wireless access point or bridge, 5.8 GHz

*-xx represents region code; for example, -01 for the United States and Canada

OPTIONAL ACCESSORIES

EW-ANTP-2-9	Planar antenna with integrated mount for EW5001-2 units, 2.4 GHz, 8.5 dBi gain, 75° x 60° beamwidth
EW-ANTP-5-14	Planar antenna with integrated mount for EW5001-5 units, 5.8 GHz, 13.5 dBi gain, 40° x 35° beamwidth
EW-ANTP-5-23*	Planar antenna with mount for EW5001-5 units, 5.8 GHz, 23.0 dBi gain, 9° x 9° beamwidth
EW-ANTP-5-28*	Planar antenna with mount for EW5001-5 units, 5.8 GHz, 28.0 dBi gain, 4.5° x 4.5° beamwidth
EW-ANTG-2-14*	Grid parabolic dish antenna with mount for EW5001-2 units, 2.4 GHz, 14.0 dBi gain, 21° x 17° beamwidth
EW-ANTS-2/5-13	Dual band sector antenna with mount for EW5001-2 or EW5001-5 units: • 2.4 GHz, 12.0 dBi gain, 120° x 15° beamwidth • 5.8 GHz, 14.0 dBi gain, 120° x 8° beamwidth
EW-ANTC-06	6-inch (15.24 cm) antenna cable for integrated antenna
EW-ANTC-3	3-foot (0.91 m) antenna cable for separate antenna
EW-ANTC-10	10-foot (3.05 m) antenna cable for separate antenna
EW-ETHC-10	10-foot (3.05 m) weatherproof Ethernet cable (silicon filled)
EW-ETHC-33	33-foot (10.06 m) weatherproof Ethernet cable (silicon filled)
EW-ETHC-66	66-foot (20.12 m) weatherproof Ethernet cable (silicon filled)
EW-ETHC-148	148-foot (45.11 m) weatherproof Ethernet cable (silicon filled)
EW-ETHC-295	295-foot (89.92 m) weatherproof Ethernet cable (silicon filled)
ES-MKIT	Esprit® marine kit
EW-BPS-6	6-foot (1.83 m) bench power cable for bench configuration
EW-SC-6	6-foot (1.83 m) service cable for bench configuration (only to be used by an Endura-certified technician)

*Use these antennas when the EW5001 is configured as a bridge for point-to-point operation.

Before You Begin

Endura is a network system that requires a continuous amount of bandwidth to transmit true, live video. Therefore, always include your network administrator when planning and installing Endura components.

You will also need the following items:

- Pelco-approved Endura certification
- Access to an Endura network
  - that is an active, Gigabit Ethernet network that supports the full Internet Protocol suite,
  - that is configured with at least one Endura system manager,
  - that is configured with at least one Endura workstation, and
  - that will be configured with at least one EW5301T wireless video encoder or one EW5001 or EW5002 wireless bridge.
- Wireless site plan, designed by a Pelco-certified wireless design consultant

NOTES:

- Endura components are designed to deliver high-quality, high-frame rate video across a network. For best results, make sure your installation meets the power, environmental, and networking guidelines described in the Endura Installation Guidelines and Best Practices document (C2670M).
- When using one or more network switches on the Endura network, enable autonegotiation on all switches.
- These network requirements represent the minimum standard for a small Endura-capable security network. Please consult the Endura Network Design Guide (C1640M) to make sure your network is properly configured. Your system may be different and may require additional hardware, software, and network resources.

PARTS LIST

Qty	Description
1	EW5001 wireless access point: 1 EW5001 unit 1 Junction box (J-box)
1	Power connector and cable
1	Weatherproof network connector
1	EW5001 Installation manual (C2681M)
1	EW5001 Configuration manual (C2684M)
1	Wireless Antenna Installation manual (C2698M)
1	Safety instructions

NOTE: Antennas are not included with the EW5001.

USER-SUPPLIED PARTS

In addition to the standard tools and cables required for a video security installation, you will need to provide the following items:

Qty	Description
1	Power source; refer to *Power and Network Wiring* on page 13 for more information
1	Cat5e (or better) unshielded twisted pair (UTP) cable and connectors for connecting the EW5001 to the Endura network: • Weatherproof • Silicon filled • Long enough to reach the EW5001 from the network switch, up to 328 ft (100 m)
1 or 2	7/16-inch wrench
1	Digital voltmeter (DVM) with BNC adapter
1	Antenna
1	Antenna cable

You will also need any tools required for installing the specific mount (refer to the mount documentation).

PACKAGE CONTENTS

The following diagram shows the contents of the box.

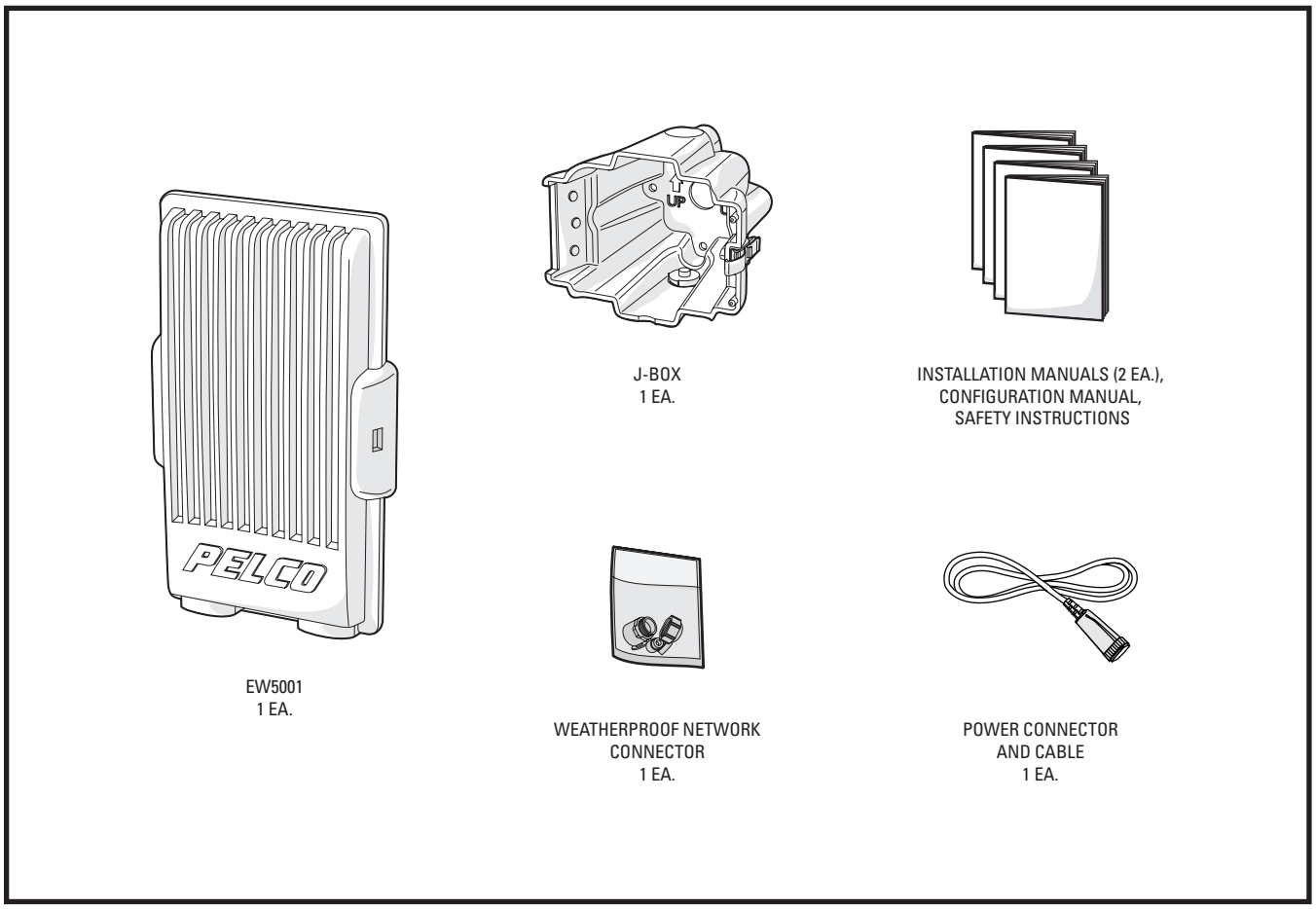

Figure 1. Package Contents

APPLICATION SCENARIOS

Figure 2 shows the EW5001 used as an access point for multiple EW5301T video encoders in a sample application scenario.

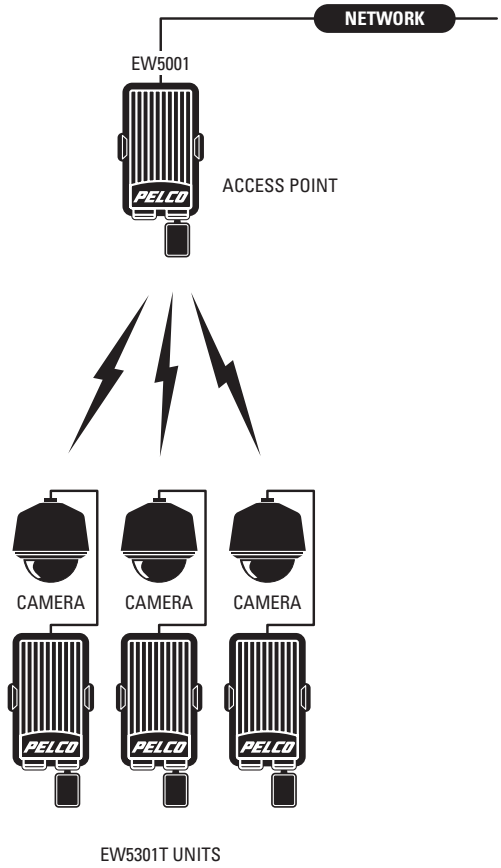

Figure 2. Sample EW5001 Access Point Application Scenario

IMPORTANT NOTE. PLEASE READ. The network implementation in this document is shown as a general representation only and is not intended to show detailed network topologies. Your actual network will differ, requiring changes or perhaps additional network equipment to accommodate the system as illustrated. Please contact your local Pelco Representative to discuss your specific requirements.

Figure 3 shows the EW5001 used as a wireless bridge between an Endura network and an EW5002 with a cluster of EW5301T video encoders.

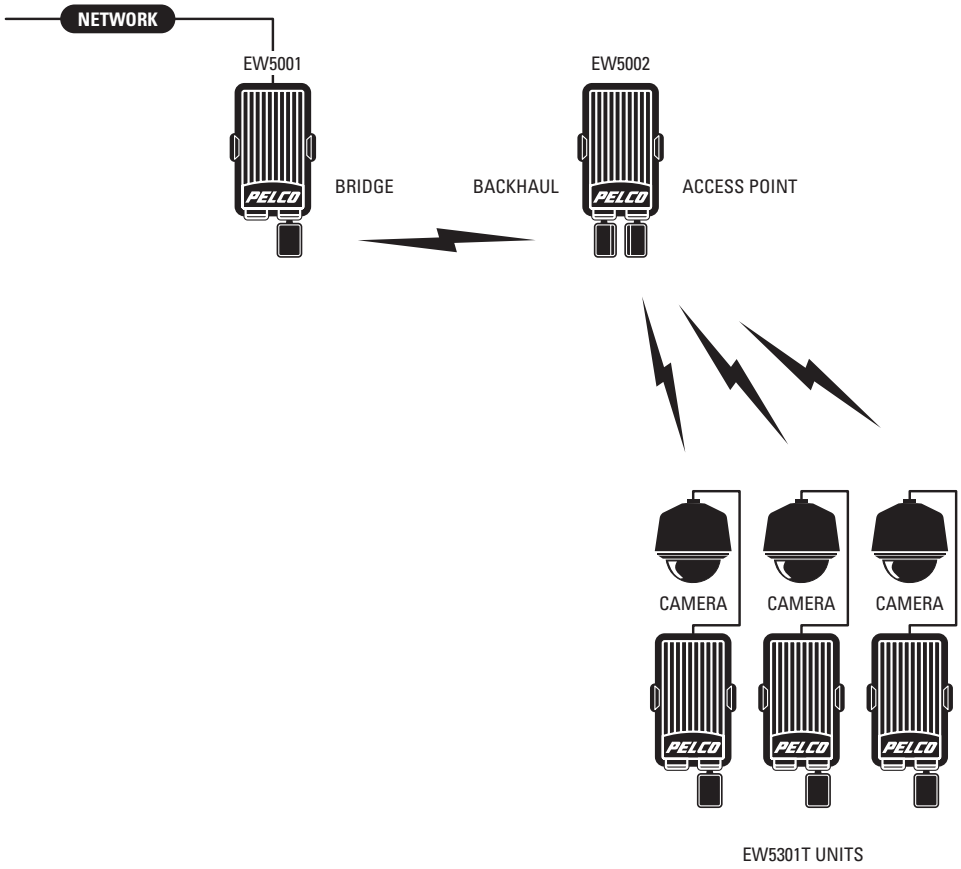

Figure 3. Sample EW5001 Wireless Bridge Application Scenario

Figure 4 shows the EW5001 used as a wireless bridge between an Endura network and an Endura-enabled IP-type device.

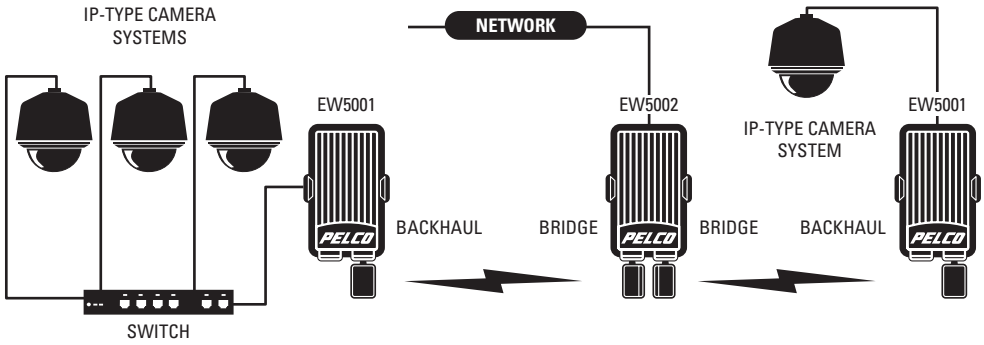

Figure 4. Sample EW5001 Wireless Bridge with IP-Type Devices Application Scenario

NOTE: This scenario can only be configured by an Endura-certified technician. Refer to the Endura Wireless Device Advanced Configuration Interface manual (C3615M) for more information.

PRODUCT SERIAL NUMBER LABEL PLACEMENT

Product serial number labels help Pelco Product Support identify your system and its factory configuration in case the EW5001 or its components require service.

A label citing your product's serial number is attached to the rear panel of the EW5001. Because the label will be covered by the J-box (supplied), two additional labels are provided. These additional labels also list the media access control (MAC) or network adapter address for the unit. Attach one of them to your product documentation or other location. The second label is a spare.

To use these labels:

1. On the rear panel of your EW5001, locate two small labels, attached with a yellow sticker that reads, "Extra serial number labels: remove prior to installation."
2. Remove the yellow sticker and the labels.
3. Peel away the backing from one label and attach it to this installation manual, other product documentation, or other location.

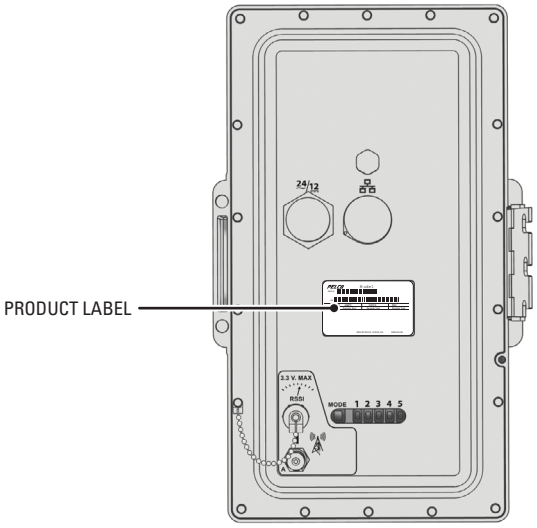

Figure 5. Product Serial Number Label

Site Preparation

Before you install the EW5001, complete the following items:

- Select a site for the EW5001.
- Install a mount for the EW5001.
- Wire the site for power and network access. The EW5001 supports Power-over-Ethernet (PoE).
- Install the antenna.
- *Optional:* Configure the network and wireless settings for the EW5001 on a workbench.

SITE SELECTION

Wireless performance is affected by site characteristics, unit radio frequency and transmission rate, antenna options, and the "noise floor" at the site. The noise floor may include thermal noise, objects between transmitter and receiver, and any interfering signals.

Performance is also affected by the number of encoders and the distance between each encoder and the access point. The farther the distance, the fewer the number of encoders. The shorter the distance, the greater the number of encoders.

Site selection should be performed by a Pelco-certified wireless design consultant, whose site survey will address these wireless performance issues as part of their site plan. The plan will identify the number and location for each wireless device, based on distances, radio frequency, and antenna options. Be sure to follow the site plan as specified by the consultant.

MOUNT INSTALLATION

The EW5001 includes two major mounting components. The unit itself attaches to the J-box. The J-box attaches to any mount with a standard Pelco four-bolt pattern.

Before selecting a mount, plan the wiring paths for power and network cables. The J-box has three openings: one on the top, one on the bottom, and one in the mount surface. Select a mount that facilitates the wiring paths. Table A lists compatible Pelco mounts:

Table A. Compatible Pelco Mounts

Mount	Description	Required Adapter	Maximum Load
EPM	Esprit pole mount with center feedthrough hole	None	100 lbs (45 kg)
PA402	Pole mount	EA4348 adapter plate	75 lbs (34 kg)
CM100	Corner mount	None	75 lbs (34 kg)
CM400	Corner mount	EA4348 adapter plate	75 lbs (34 kg)
ECM100	Esprit corner mount with center feedthrough hole	None	75 lbs (34 kg)
PP100	Parapet mount	None	75 lbs (34 kg)
PP300L/PP301L	Parapet corner mount	EA4348 adapter plate	175 lbs (79 kg)
PP400	Parapet mount	EA4348 adapter plate	75 lbs (34 kg)
PP4348	Parapet rooftop mount	EA4348 adapter plate	75 lbs (34 kg)

NOTES:

- Make sure the mount supports at least 25 lbs (11.4 kg) for the EW5001. If installing additional equipment to the mount, make sure the mount will support the total weight of the EW5001 and the additional equipment.
- Use the ES-MKIT Esprit marine kit for all marine installations.

Install the mount (refer to the mount documentation for more information).

POWER AND NETWORK WIRING

The EW5001 supports two methods for supplying power and network access to the unit: separate power and network cables or a single network cable using Power-over-Ethernet (PoE) technology. The following sections describe both methods.

SEPARATE POWER AND NETWORK CABLES

Figure 6 shows how to connect separate power and network cables to the EW5001.

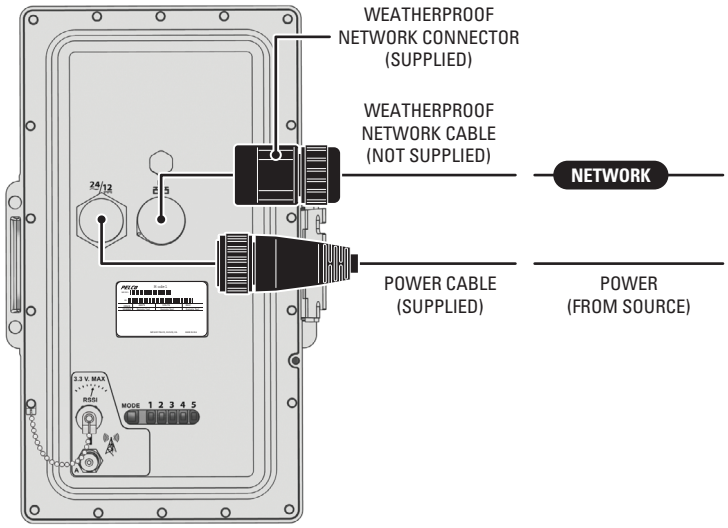

Figure 6. Sample Installation for Separate Power and Network Cables

Low-Voltage Power

The EW5001 can be powered by either a 12 VDC or a 24 VAC power supply. It automatically senses power type and polarity (DC). The unit can be powered from any environmentally-rated Class 2 power unit that supplies 12 VDC ±10% or 24 VAC ±10%. Unit power consumption is 9.7 W (16.2 VA).

Be sure to supply adequate power to the site for the EW5001 as well as any additional equipment. Use Table B to help identify the necessary wire gauge and maximum cable distance. This table applies to 2-conductor solid copper wire. (reduce distance by 10 percent for stranded copper wire.) These maximum distances are based on a maximum allowable voltage drop of 10 percent.

Table B. Recommended Wire Gauge and Maximum Wiring Distances

	Maximum Distance	
Wire Gauge	**12 VDC**	**24 VAC**
20 AWG (0.5 mm^2)	101 ft (30 m)	407 ft (124 m)
18 AWG (1.0 mm^2)	161 ft (49 m)	647 ft (197 m)
16 AWG (1.5 mm^2)	257 ft (78 m)	1,028 ft (313 m)
14 AWG (2.5 mm^2)	408 ft (124 m)	1,632 ft (497 m)
12 AWG (4.0 mm^2)	647 ft (197 m)	2,591 ft (789 m)
10 AWG (6.0 mm^2)	1,028 ft (313 m)	4,114 ft (1,253 m)

The EW5001 includes a 10-foot (3 m) cable with an environmentally-rated plug for connecting power to the unit.

To install the power cable (refer to Figure 6 on page 13):

1. Run power lines from the power supply to the mount site (refer to the power specifications at the start of this section).
2. Connect the power lines from the power supply to the supplied power cable, as indicated:

Wire Color	DC	AC
White	DC+	AC+
Black	Ground	AC-

NOTES:

- Be sure to use environmentally-rated connectors when connecting power to the EW5001. Otherwise, unit reliability may suffer.
- The supplied power cable may include other leads that are not used.
- If the supplied power cable cannot reach from the power source to the mount site, attach additional power cable. Make sure the cable is rated for outdoor use.
- If you use a junction box or patch panel, make sure the connection is protected from the weather.
- Installers should consult local, state, and federal code requirements before installing this cable or running this cable inside any building. Installers should also use best practices when terminating this or any other cable lead.

3. Run the other end of the supplied power cable to the mount site.

You will connect the power cable to the EW5001 later (refer to *Unit Installation* on page 19).

Network Cable

The EW5001 requires a network cable that meets the following specifications:

- Weatherproof
- Silicon filled
- Cat5e or greater unshielded twisted pair (UTP)
- Long enough to reach the EW5001 from the network switch, up to 328 ft (100 m)

Refer to *Optional Accessories* on page 5 for a list of approved cables of various lengths that can be purchased from Pelco.

To install the network cable (refer to Figure 6 on page 13):

1. Run the network cable from a network switch inside the building to the mount site. The equipment must support Gigabit Ethernet operation.

   NOTE: If you use a junction box or patch panel, make sure the connection is protected from the weather.

2. Install the supplied weatherproof network connector onto the network cable at the mount site (refer to Figure 7):

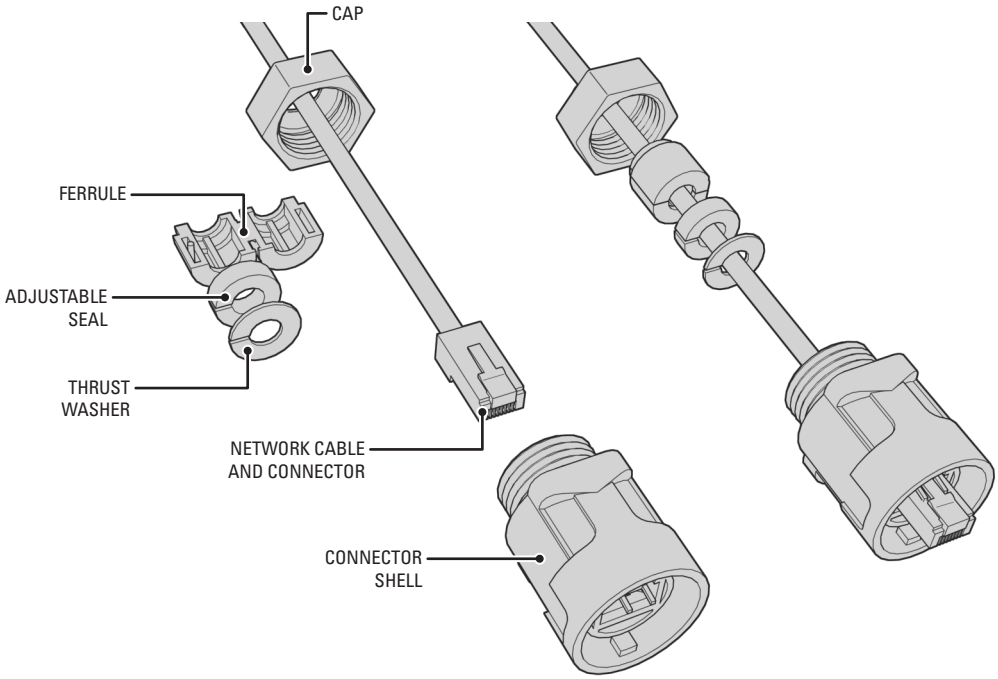

Figure 7. Assembling the Weatherproof Network Connector

   a. Slide the small end of the connector cap onto the network cable.
   b. Insert the RJ-45 connector firmly into the connector shell. Make sure the connector locks into place.
   c. Snap the ferrule onto the cable between the cap and the connector shell. Make sure the small end of the ferrule points toward the cap.
   d. Attach the compression gland to the cable between the ferrule and the connector shell. The gland is multilayered. If the hole is too small, remove the innermost layers one at a time until the gland fits the cable snugly.
   e. Attach the thrust washer to the cable between the compression gland and the connector shell.
   f. Gently slide the ferrule, gland, and washer into the connector shell.
   g. Twist the cap tightly onto the connector shell. If the cap is loose, the connector could fail.

You will connect the weatherproof network connector to the EW5001 later (refer to *Unit Installation* on page 19).

POWER-OVER-ETHERNET (POE)

Power-over-Ethernet (PoE) lets you supply both power and network connectivity over a single cable. This simplifies installation and decreases the potential for unit failure.

The EW5001 supports PoE from either a PoE injector or a PoE-enabled network switch. The equipment must support Gigabit Ethernet and supply 15.4 W at 48 VDC. Unit power consumption is 9.7 W (16.2 VA). Approved gigabit PoE injectors are available from Pelco.

NOTE: For PoE operation, the unit must be reliably grounded when installed.

Figure 8 shows how to implement PoE on the EW5001 using a PoE injector.

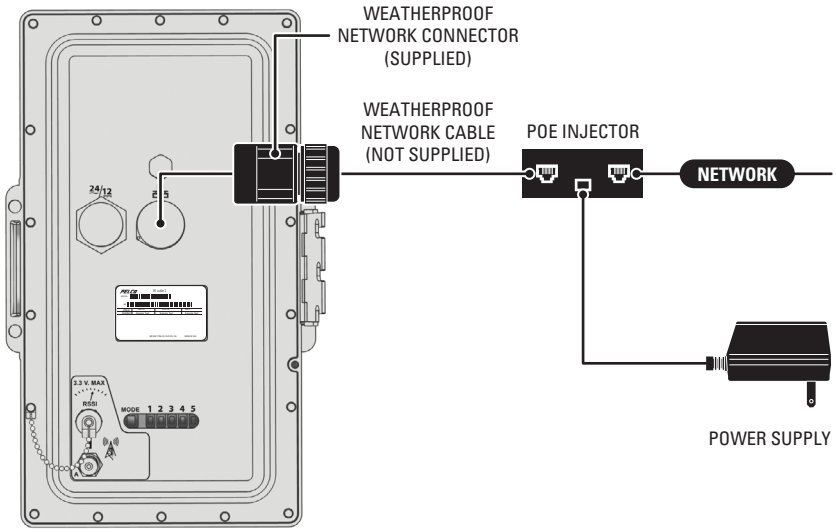

Figure 8. PoE Injector Configuration

The EW5001 requires a network cable that meets the following specifications:

- Weatherproof
- Silicon filled
- Cat5e or greater unshielded twisted pair (UTP)
- Long enough to reach the EW5001 from the PoE equipment, junction box, or patch panel, up to 328 ft (100 m)

Refer to *Optional Accessories* on page 5 for a list of approved cables of various lengths that can be purchased from Pelco.

To install PoE for the EW5001 (refer to Figure 8):

1. Install the PoE equipment (refer to the equipment documentation).
2. Run the network cable from the PoE equipment to the mount site. The equipment must support Gigabit Ethernet operation.

   NOTE: If you use a junction box or patch panel, make sure the connection is protected from the weather.

3. Install the supplied weatherproof network connector onto the network cable at the mount site (refer to Figure 9):

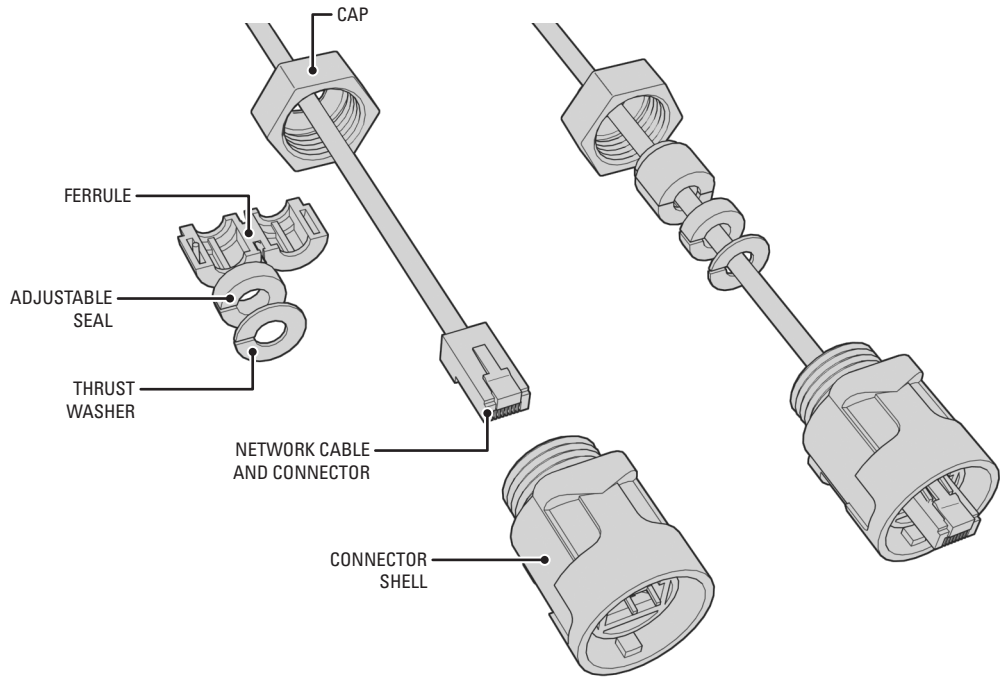

Figure 9. Assembling the Weatherproof Network Connector

   a. Slide the small end of the connector cap onto the network cable.
   b. Insert the RJ-45 connector firmly into the connector shell. Make sure the connector locks into place.
   c. Snap the ferrule onto the cable between the cap and the connector shell. Make sure the small end of the ferrule points toward the cap.
   d. Attach the compression gland to the cable between the ferrule and the connector shell. The gland is multilayered. If the hole is too small, remove the innermost layers one at a time until the gland fits the cable snugly.
   e. Attach the thrust washer to the cable between the compression gland and the connector shell.
   f. Gently slide the ferrule, gland, and washer into the connector shell.
   g. Twist the cap tightly onto the connector shell. If the cap is loose, the connector could fail.

You will connect the weatherproof network connector to the EW5001 later (refer to *Unit Installation* on page 19).

ANTENNA INSTALLATION

Pelco offers a planar antenna with integrated mount (EW-ANTP-2-9 or EW-ANTP-5-8) for use with the EW5001. These are the only antennas that can be mounted directly to the EW5001. Any other antenna must be mounted separately.

Before installing either an integrated antenna or a separate antenna, review the following considerations:

- Make sure the elevation (height) and azimuth (horizontal angle) match at both wireless antenna sites. The units cannot connect unless the antennas are pointing at each other. Antenna misalignment causes the most problems for wireless installations.
- To limit signal loss, use the shortest cable possible. For every 3 ft (0.91 m) of length, antenna cables lose about 1.0 dB at 5.8 GHz or about 0.7 dB at 2.4 GHz.

If you are using an integrated antenna, you will mount it to the EW5001 as part of the installation procedure (refer to *Unit Installation* on page 19).

If you are using a separate antenna, install it to the mount site. Refer to the Endura Wireless Antenna Installation manual (C2698M).

BENCH SETUP (OPTIONAL)

The EW5001 is designed for easy installation and configuration. By default, it is configured as an access point to quickly connect wireless video encoders to an Endura network. Most default settings are automatically configured, including network IP addresses, dynamic host configuration protocol (DHCP) server, encryption, wireless channels, and connection speed. In some cases, it may be necessary to configure the unit on a workbench before installing it at its location.

You will need the following items:

- Power source: Power-over-Ethernet (PoE) device or bench power cable (EW-BPS-6)
- Network connection or DHCP hub
- Service cable (EW-SC-6) for the EW5001 (optional)

For more information, refer to the following manuals:

- EW5301T Configuration manual (C2683M)
- EW5001 Configuration manual (C2684M)
- EW5002 Configuration manual (C2685M)
- Endura Wireless Bench Cables manual (C3624M)

Unit Installation

To install the EW5001:

NOTE: If installing a separate antenna, skip to step 2 on page 20.

1. Attach the integrated antenna and antenna cable to the EW5001.

NOTES:

- It is easier to attach the integrated antenna to the unit on the ground before carrying it up to the mount.
- Do not rest the device on the integrated antenna; the antenna mount cannot support the weight of the device.

a. Attach the integrated antenna to the EW5001 (refer to Figure 10). Do not tighten the bolts until you align the integrated antenna (refer to *Antenna Alignment* on page 26).

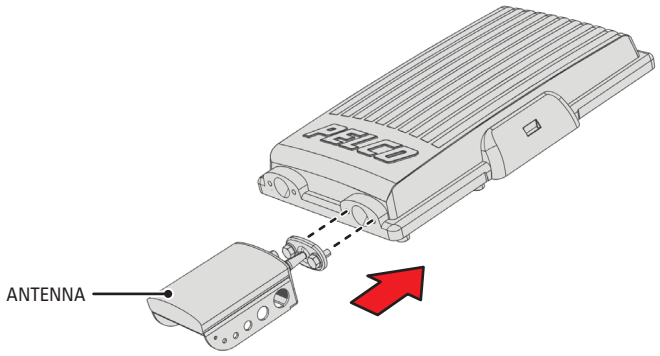

Figure 10. Attaching the Integrated Antenna

b. Remove the protective cover from the antenna connector on the rear panel.

c. Connect the antenna cable to the integrated antenna and the EW5001 (refer to Figure 11).

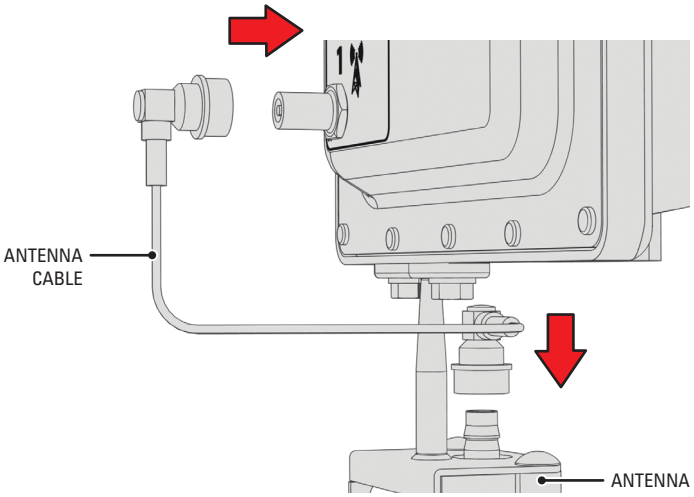

Figure 11. Connecting the Antenna Cable

d. Make sure both antenna connectors are fully seated. When inserting the connector, you should hear or feel two clicks.

2. Install the mount (refer to the mount documentation for more information).
3. Orient the J-box so that the arrows and the word "UP" are pointed up (refer to Figure 12).

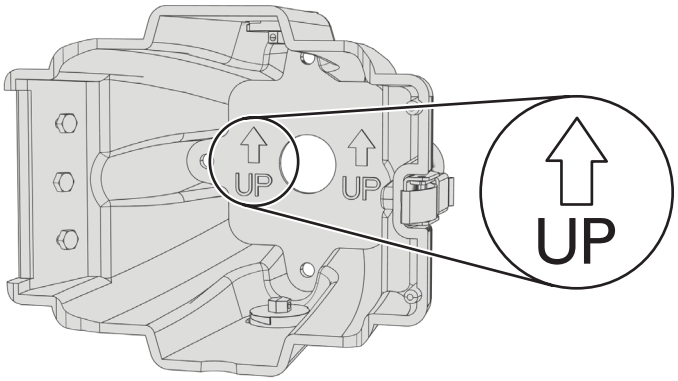

Figure 12. J-Box Orientation

4. Secure the J-box to the mount (refer to Figure 13).

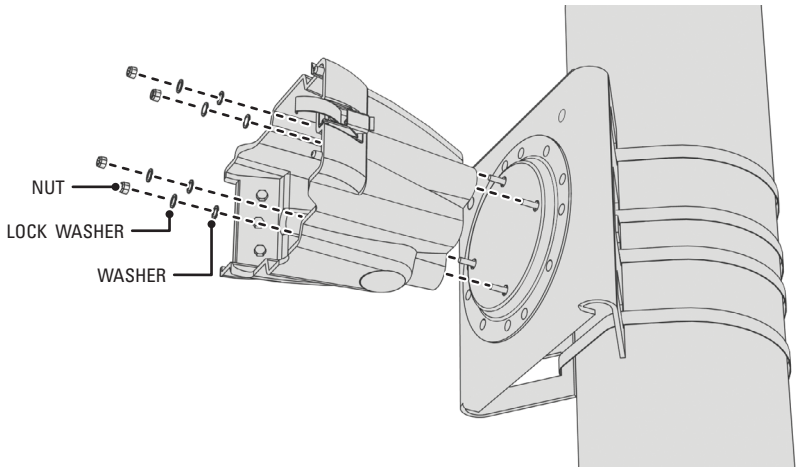

Figure 13. Installing the J-Box *(EWM shown)*

NOTES:

- The nuts, washers, and lock washers shown in Figure 13 are for illustration only. They are not supplied with the EW5001. Use the actual hardware from the mount to secure the J-box to the mount.
- Use the ES-MKIT Esprit marine kit for all marine installations.

5. Identify the best route for the power and network cables into the J-box (refer to Figure 14).

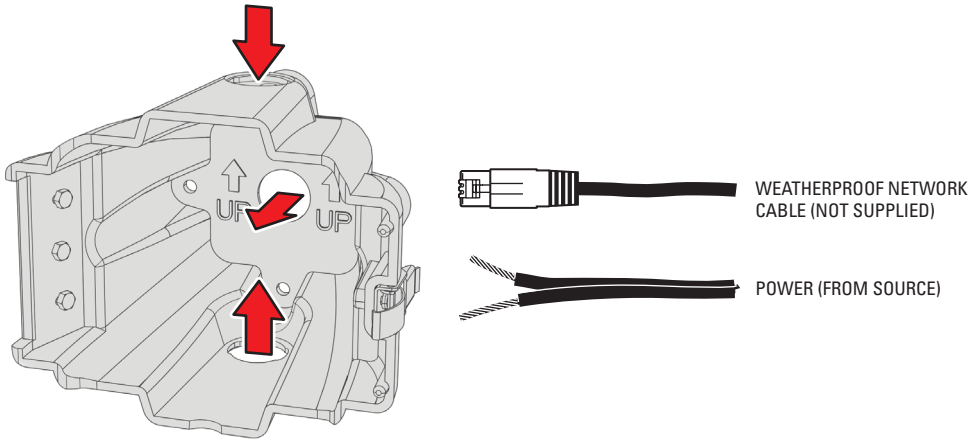

Figure 14. Routing Power and Network Cables

6. *To use the top or bottom opening for cables:* Remove the plug from the appropriate opening in the J-box (refer to Figure 15). Use a 7/16-inch wrench.

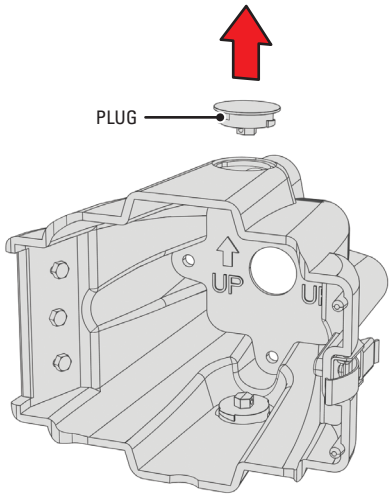

Figure 15. Removing an Auxiliary Opening Plug

7. Route the power and network cables into the J-box through the top, back, or bottom opening (refer to Figure 14).

8. Hang the hinge of the EW5001 onto the hinge bolts in the J-box (refer to Figure 16).

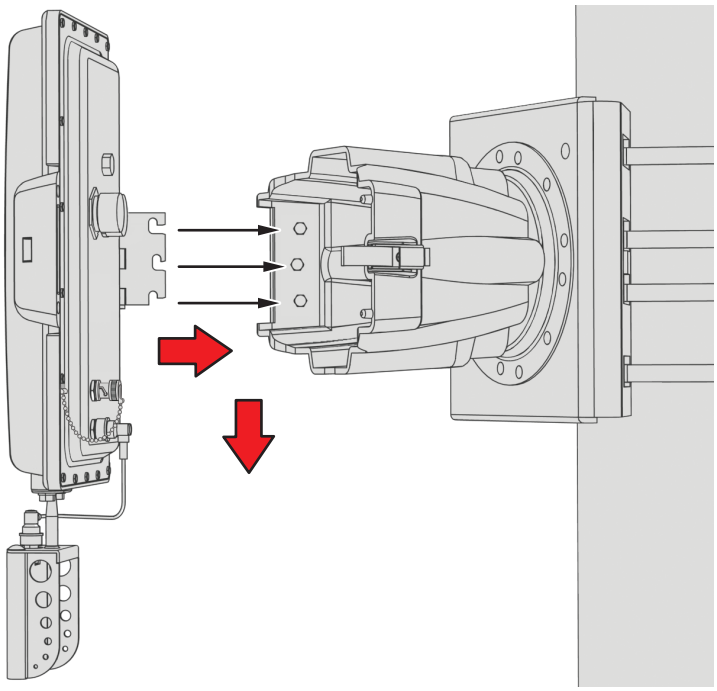

Figure 16. Attaching the EW5001 to the J-Box

9. Tighten the hinge bolts to secure the EW5001 to the J-box.

10. Connect all cables (refer to Figure 17):

    NOTE: Be sure to fully seat each connector. Otherwise, environmental protection may fail, causing the unit to fail.

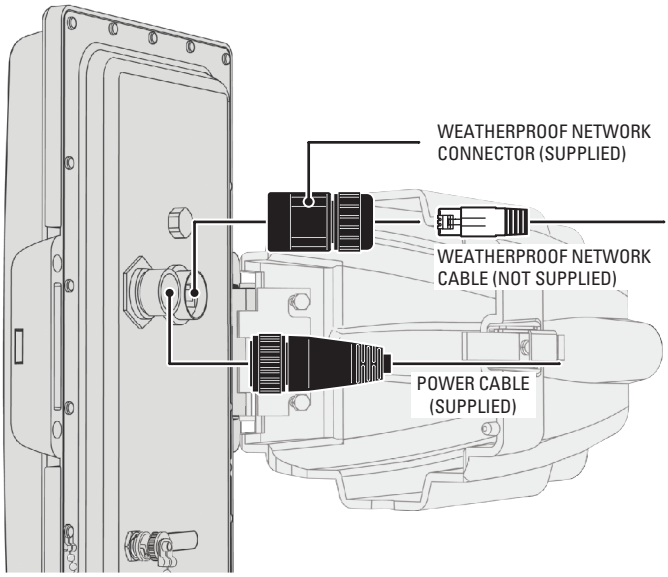

Figure 17. Connecting Cables to the EW5001

a. *If installing a power cable:* Connect the power cable connector.

   (1) Remove the protective cover from the power connector on the rear panel.

   (2) Connect the power cable to the power connector on the rear panel. The connector is keyed and only attaches one way. Make sure you twist the connector all the way down.

b. Connect the weatherproof network connector.

   NOTE: The supplied weatherproof network connector must be installed before you continue. To install the connector, refer to the appropriate section: *Separate Power and Network Cables* on page 13 or *Power-over-Ethernet (PoE)* on page 16.

   (1) Remove the protective cover from the network connector on the rear panel.

   (2) Connect the weatherproof network connector to the network connector on the rear panel. The connector is keyed and only attaches one way. Make sure you twist the connector all the way down.

c. *If using an integrated antenna:* Check the antenna connector to make sure it is fully seated. When inserting the connector, you should hear or feel two clicks.

d. *If using a separate antenna:* Connect the antenna cable.

   (1) Make sure the frequency of the antenna matches the frequency of the EW5001. A label is attached to the antenna connector; the blue label is for 2.4 GHz, the red label is for 5.8 GHz.

   (2) Make sure the antenna cable is the correct length (refer to *Optional Accessories* on page 5).

   (3) Remove the protective cover from the antenna connector on the rear panel.

   (4) Connect one end of the antenna cable to the antenna. Connect the other end of the cable to the connector on the rear panel. Make sure both connectors are fully seated. When inserting the connector, you should hear or feel two clicks.

11. Close and latch the EW5001 to the J-box.

DISCONNECTING AN ANTENNA CABLE

The antenna cable connector is locking. To disconnect it, first pull the sleeve away from the device and hold it (refer to Figure 18). Then pull the connector from the device.

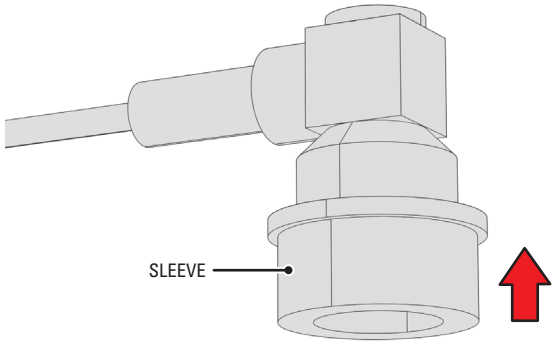

Figure 18. Disconnecting an Antenna Cable Connector

OPENING THE J-BOX

The latch that secures the EW5001 includes a safety release.

To open the J-box, refer to Figure 19 and perform the following steps:

1. Press and hold the safety release.
2. Release the latch.
3. Open the J-box.

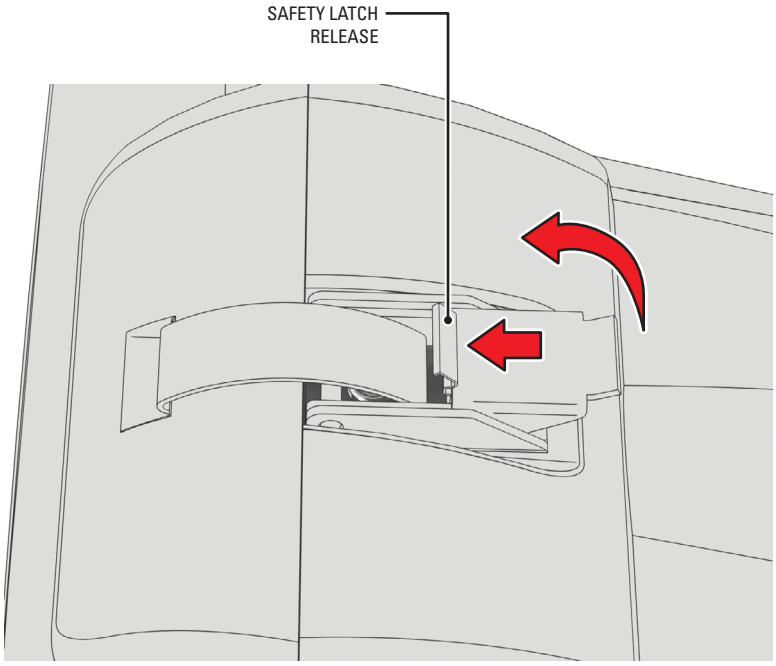

Figure 19. J-Box Safety Latch Release

Operation

INDICATORS

The EW5001 has a set of six indicators on its rear panel (refer to Figure 20). These indicators show unit status during startup and normal operation.

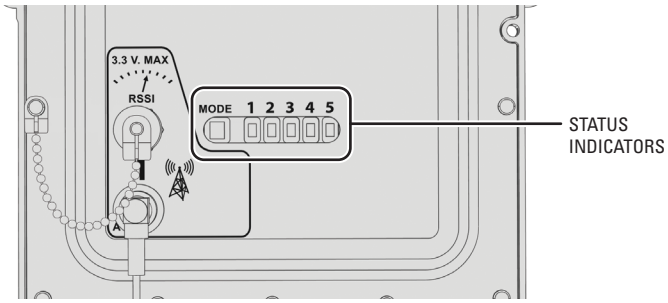

Figure 20. EW5001 Status Indicators

INDICATORS DURING STARTUP

During the startup sequence, the unit steps through a number of phases. The color of the MODE indicator shows the status of each phase:

- **Green:** The phase was completed successfully.
- **Amber:** The phase is in process. When this indicator is amber, the indicator for the phase will blink.
- **Red:** An error occurred that could not be corrected. The unit halts the startup process.

Table C shows the color and state of each indicator during startup.

Table C. Indicators During Startup

Startup Phase	MODE	1	2	3	4	5
Initializing boot loader.	Off	Off	Off	Off	Off	Off
Boot loader initialized.	Amber	Off	Off	Off	Off	Off
Initializing operating system and unit hardware.	Amber	Blinking	Off	Off	Off	Off
Operating system and unit hardware initialized.	Amber	On	Off	Off	Off	Off
Receiving network address (only when using Endura DHCP server).	Amber	On	Off	Off	Blinking	Blinking
Received network address (either static or from DHCP server).	Green	On	Off	Off	On	Blinking
Access point: Activating radio. **Bridge:** Connecting to peer bridge.	Green	On	Blinking	Off	On	Blinking
Access point: Radio activated. **Bridge:** Peer bridge connected.	Green	On	On	Off	On	Blinking
Connecting to SM5000 on Endura network.	Green	On	On	Off	On	Blinking
Connected to SM5000.	Green	On	On	Off	On	On

If the Endura network is in secure mode, LED 5 will keep blinking. As soon as you manually add or accept the EW5001 onto the Endura network from an Endura workstation, LED 5 will stop blinking. Refer to the Endura WS5000 Advanced System Software Operation manual (C1624M) for more information about secure mode.

NOTE: LED 3 is unused on the EW5001.

INDICATORS DURING OPERATION

During operation, the indicators show unit status as well as status changes (refer to Table D).

Table D. Indicators During Operation

Status Change	MODE	1	2	3	4	5
Unit connected to SM5000 and operating normally.	Green	On	On	Off	On	On
Unit lost connection to SM5000 on Endura network.	Amber	On	On	Off	On	Blinking
Endura network did not renew unit network address.	Amber	On	On	Off	Blinking	Off
Bridge: Unit lost connection to peer bridge. Unit directly connected to Endura network.	Amber	On	Blinking	Off	On	On
Bridge: Unit lost connection to peer bridge and SM5000.	Amber	On	Blinking	Off	On	Blinking

ANTENNA ALIGNMENT

To achieve the best results, align the antenna on the EW5001 with the antenna on the other Endura wireless device. Make sure the antennas on each wireless unit are pointed directly at each other.

The Receiver Signal Strength Indicator (RSSI) port provides an easy way to help align the antenna for the best possible signal level. RSSI is a function of transmission power, receiver sensitivity at a specific link speed, antenna alignment, and the noise floor. One way to improve the RSSI is to use a lower link speed.

The EW5001 regularly calculates the RSSI value. Once calculated, it outputs this power level to the RSSI connector, where you can read it with a digital voltmeter (DVM). The RSSI value ranges from 0 V (zero volts) to 3.3 V. When adjusting the antenna, get as close to 3.3 V as possible. Table E correlates the DVM reading to the number of decibels above the noise floor.

Table E. Correlation of RSSI Volts and Decibels

RSSI (Volts)	RSSI (dB)
3.3 and up	64 and up
2.98 to 3.28	41 to 64
2.62 to 2.97	31 to 40
2.12 to to2.6	21 to 30
0 to 2.1	0 to 20

For this procedure, you will use the RSSI connector on the rear panel and a DVM with a BNC adapter.

NOTE: The RSSI connector on the EW5001 rear panel is disabled when the unit is configured as an access point. To align the access point with one or more EW5301T video encoders, perform the antenna alignment procedure on each EW5301T; refer to the EW5301T Installation manual (C2677M).

⚠ **WARNING:** Do not put your hand or other body part in front of a directional antenna during this procedure.

To align the antenna:

1. Make sure the EW5001 is operational and is configured as a bridge.
2. Make sure the numbered indicators for each unit are solid green before proceeding (refer to Table F):

Table F. Indicators During Antenna Alignment

Unit	MODE	1	2	3	4	5
EW5301T	Amber	On	On	*	*	*
EW5001	Green	On	*	Off	On	*
EW5002	Green	On	*	*	On	*

*Indicators can be either on or off.

3. Point the antenna on the EW5001 toward the antenna on the other Endura wireless device.
4. Set the scale on the DVM for 0 VDC (zero VDC) to 6 VDC.
5. Uncap the RSSI connector on the EW5001 (refer to Figure 21).

   NOTE: The cap is attached to the EW5001; you will reinstall it later to protect the unit from weather damage.

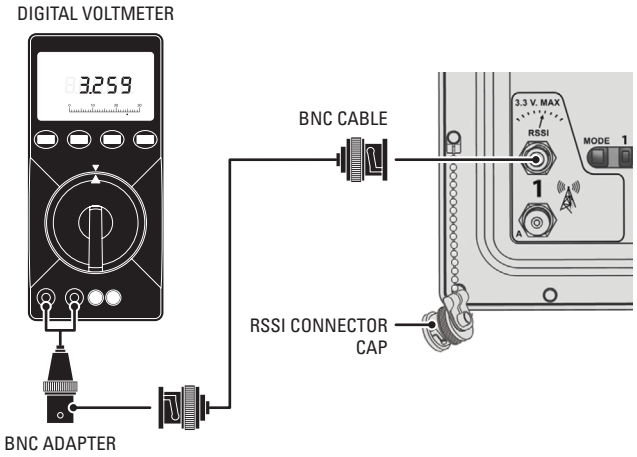

Figure 21. Connecting a DVM to the EW5001

6. Connect the DVM and a BNC adapter to the RSSI connector on the EW5001.
7. Adjust the antenna to achieve the best signal strength. The target is 3.3 VDC.
8. Tighten the antenna mounting hardware.
9. Disconnect the DVM and BNC adapter from the RSSI connector on the EW5001.
10. Reinstall the cap on the RSSI connector on the EW5001.

    NOTE: Do *not* skip this step; you must reinstall the cap to protect the unit from weather damage.

11. *Optional:* Realign the antenna on the other Endura wireless device.

    NOTE: Only realign the antenna if distance, weather, obstructions, or other factors are affecting signal strength.

CONFIGURATION

The EW5001 can be configured as an access point (default) or a bridge. To configure the EW5001, perform the following two steps:

1. Configure the network and wireless communication settings; refer to the supplied EW5001 Configuration manual (C2684M).
2. Configure the actual EW5001 Endura device settings; refer to the Endura WS5000 Advanced System Software Operation manual (C1624M).

Once configured, you can access the EW5001 the same way you access other Endura products. Refer to the Endura WS5000 Advanced System Software Operation manual (C1624M) for more information.

Troubleshooting

If the following instructions fail to solve your problem, contact Pelco Product Support at 1-800-289-9100 (USA and Canada) or 1-559-292-1981 (international) for assistance.

Access the properties windows for the EW5001 wireless access point/bridge on the Endura workstation; refer to the Endura WS5000 Advanced System Software Operation manual (C1624M). Then note the following items before calling Pelco:

- **Unit serial number:** Located on the Properties window and on the product label
- **Unit firmware version:** Located on the Advanced Properties window

NOTE: Do not try to repair the unit yourself. Opening it immediately voids any warranty. Leave maintenance and repairs to qualified technical personnel. Exchange the defective unit and return it for repair.

Table G. EW5001 Wireless Connection Issues

Problem	Possible Causes	Suggested Remedy
Status indicators are not lit.	Power turned off.	Check the power supply.
Unit cannot connect to an encoder or bridge, or video delivery from an encoder is inconsistent.	Encoder or bridge is not available.	Troubleshoot the EW5301T or EW5002 wireless device.
	The EW5001 radio type does not match the radio type of the EW5301T or EW5002 wireless device.	Make sure both units are either 2.4 GHz or 5.8 GHz models.
	Incorrect encryption settings.	Make sure the channel and encryption settings for the EW5001 match the settings on the EW5301T or EW5002 wireless device; refer to the EW5301T Operation/Configuration (C2683M), EW5001 Operation/Configuration (C2684M), or EW5002 Operation/Configuration (C2685M) manuals.
	Incorrect antenna tilt or angle, which affects the RSSI value.	Perform the antenna alignment procedure (refer to *Antenna Alignment* on page 26).
	Obstacles interfere with the line of sight between the antennas for both wireless units.	Clear obstacles from the line of sight.
		Relocate the wireless device antennas to avoid line of sight obstacles.
	Antenna cable connector is not fully seated.	Disconnect and inspect both antenna cable connectors. Then reconnect both connectors.
	Antenna is not mounted securely.	Secure the antenna to the mount.
	Antenna cable is too long, which affects link margin.	Install shorter antenna cable (refer to *Antenna Alignment* on page 26). You may have to move the unit and antenna closer together.
	Insufficient link margin or bandwidth.	Relocate antenna for better wireless performance.
		Install antenna with higher antenna gain at either wireless device.
		Decrease the number of EW5301T units in the cluster for an access point.
		Disable the EnduraView™ feature on one or more EW5301T units; refer to the EW5301T Operation/Configuration manual (C2683M).
	Other network connectivity issues.	Contact your network administrator or Endura-certified technician.
The unit is not ready for operation after firmware upload.	Voltage failure during programming of update file.	Replace the device and have it checked by Pelco.

Specifications

MODEL NUMBER

EW5001-2	Wireless access point or bridge; 2.4 GHz
EW5001-5	Wireless access point or bridge; 5.8 GHz

SUPPLIED ACCESSORIES

Power Cable with Connector	1
Weatherproof Network Connector	1

SYSTEM

Operating System	Linux®
User Interface	Remote operation from Endura workstation or VCD5000

INDICATORS

MODE	Green, amber, red
1 through 5	Green

RADIO FREQUENCY

Wireless Radio Standards	802.11a/802.11g
Modulation	OFDM
Transmitting Frequency	
2.4 GHz*	2.412 to 2.462 GHz (ISM)
5.8 GHz	5.745 to5.825 GHz (ISM)
Power Output	
2.4 GHz	24 to 28 dBm (±1 dB)
5.8 GHz	21 to 26 dBm (±1.5 dB)
Receiver Sensitivity	
2.4 GHz	-91 to -74 dBm (±1 dB)
5.8 GHz	-91 to -74 dBm (±1.5 dB)
Channels	
2.4 GHz*	11, overlapping
5.8 GHz	5, nonoverlapping
Antenna Types and Gain	
Planar antenna	2.4 GHz, 8.5 dBi gain, 75° x 60° beamwidth 5.8 GHz, 13.5 dBi gain, 40° x 35° beamwidth 5.8 GHz, 23.0 dBi gain, 9° x 9° beamwidth 5.8 GHz, 28.0 dBi gain, 4.5° x 4.5° beamwidth
Grid parabolic dish antenna	2.4 GHz, 14.0 dBi gain, 21° x 14° beamwidth
Dual band sector antenna	2.4 GHz, 12.0 dBi gain, 120° x 15° beamwidth 5.8 GHz, 14.0 dBi gain, 120° x 8° beamwidth
Polarization	Vertical, horizontal
Data Throughput Rate	12 Mbps to 54 Mbps

*****Due to USA and Canada regulatory compliance, 2.4 GHz models are restricted. Power output is limited to 16.75 dBm; channels 1, 10, and 11 are unavailable.

NETWORK

Interface	1, RJ-45, 10/100/1000Base-T
Security	2 modes: secure mode (device authentication) and unsecure mode

POWER

Power Consumption	9.7 W, 33 BTU/H
Power Input	12 VDC ±10% 24 VAC ±10% 48 VDC (PoE) (802.3af-compliant)

ENVIRONMENTAL

Operating Temperature	-30° to 122°F (-34° to 50°C)
Storage Temperature	-40° to 149°F (-40° to 65°C)
Operating Humidity	20% to 95%, noncondensing
Operating Altitude	-50 ft to 10,000 ft (-16 m to 3,048 m)

PHYSICAL

Construction	Cast aluminum
Finish	White powder coat
Dimension (Without Antenna)	8.76" D x 8.66" W x 14.49" H (22.25 x 22.00 x 36.80 cm)
Unit Weight (Without Antenna)	13.5 lb (6.13 kg)
Effective Projected Area (EPA) (Without Antenna)	159 sq. in.
Mounting	Corner, pole, or parapet with options (for outdoor use only)
Ratings	Meets NEMA Type 6P and IP68 standards.

OPTIONAL MOUNTING ACCESSORIES

ECM100	Esprit corner mount with center feedthrough hole
EPM	Esprit pole mount with center feedthrough hole
CM100/CM400	Corner mount
PA402	Pole mount
PP100/PP400	Parapet mount
PP300L/PP301L	Parapet corner mount
PP4348	Parapet rooftop mount
EA4348	Adapter plate for CM400, PA402, PP300L, PP301L, PP400, and PP4348
ES-MKIT	Esprit marine kit

STANDARDS/ORGANIZATIONS

- Pelco is a member of the MPEG-4 Industry Forum
- Pelco is a member of the Universal Plug and Play (UPnP) Forum
- Pelco is a member of the Universal Serial Bus (USB) Implementers Forum
- Pelco is a contributor to the International Standards for Organization/Electrotechnical Commission (ISO/IEC) Joint Technical Committee 1 (JTC1), "Information Technology," Subcommittee 29, Working Group 11
- Compliance, ISO/IEC 14496 standard (also known as MPEG-4)
- Compliant with International Telecommunication Union (ITU) Recommendation G.711, "Pulse Code Modulations (PCM) of Voice Frequencies"

(Design and product specifications subject to change without notice.)

PRODUCT WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship **for a period of one year** after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years on fiber optic products and TW3000 Series unshielded twisted pair (UTP) transmission products.
- Three years on Spectra® IV products.
- Three years on Genex® Series products (multiplexers, server, and keyboard).
- Three years on DX Series digital video recorders, DVR5100 Series digital video recorders, DigitalSENTRY® Series hardware products, DVX Series digital video recorders, NVR300 Series network video recorders, and Endura® Series distributed network-based video products.
- Three years on Camclosure® and Pelco-branded fixed camera models, except the CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models, which have a five-year warranty.
- Three years on PMCL200/300/400 Series LCD monitors.
- Two years on standard motorized or fixed focal length lenses.
- Two years on Legacy®, CM6700/CM6800/CM9700 Series matrix, and DF5/DF8 Series fixed dome products.
- Two years on Spectra III™, Spectra Mini, Esprit®, ExSite®, and PS20 scanners, including when used in continuous motion applications.
- Two years on Esprit and WW5700 Series window wiper (excluding wiper blades).
- Two years (except lamp and color wheel) on Digital Light Processing (DLP®) displays. The lamp and color wheel will be covered for a period of 90 days. The air filter is not covered under warranty.
- Two years on Intelli-M® eIDC controllers.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- Six months on all pan and tilts, scanners, or preset lenses used in continuous motion applications (preset scan, tour, and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to a Pelco designated location. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental, or consequential damages (including loss of use, loss of profit, and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, sales order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product that does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

To expedite parts returned for repair or credit, please call Pelco at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair) and designated return location.

All merchandise returned for credit may be subject to a 20 percent restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid.

1-8-08

Green The materials used in the manufacture of this document and its components are compliant to the requirements of Directive 2002/95/EC.

This equipment contains electrical or electronic components that must be recycled properly to comply with Directive 2002/96/EC of the European Union regarding the disposal of waste electrical and electronic equipment (WEEE). Contact your local dealer for procedures for recycling this equipment.

REVISION HISTORY

Manual #	Date	Comments
C2681M	2/08	Original version.

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